Math HSW

10-04-14

1. $-16(3) =$

$-48 =$

2. $-8(-8) =$ ← negative times a negative is a positive

$64 =$

3. $\frac{-18}{3} =$

$-6 =$

4. $\frac{-14}{-2} =$ ← negative divided by a negative is a positive

$7 =$

5. $\frac{18+2+29+18}{4} =$ Mean

$\frac{67}{4} =$

$16.75 =$

$17 =$ round

6. $\frac{17+10+6+11+6+4+4}{7} =$ Mean

$8.285714286 =$

$8 =$ round

234 Questions

Step-by-Step Solutions

1.

TSI (A) M0320

OR

(intermediate algebra)

7. $\frac{1450 + 4460 + 6940 + 7240 + 1880 + 6250}{6} =$

Mean

2.

$\frac{28220}{6} =$

$4703.333333 =$

$4703 =$ round

8. 2, 10, 18, 24, 43, 44, 49

Median = 24

9. Determine if ordered pair satisfies the equation

$5x + 2y = 26$ $(4, 3)$

$x \; y$

$5(4) + 2(3) = 26$

$20 + 6 = 26$

$26 = 26$ Yes

10. Determine if $x = 3$ satisfies the equation

$8x - 10 = 15$, $x = 3$

$8(3) - 10 = 15$

$24 - 10 = 15$

$14 \neq 15$ NO

11. $-2x = -12$

$\frac{-2x}{-2} = \frac{-12}{-2}$

$x = 6$

3.

12. $3r + 6 = 30$

$3r + 6 - 6 = 30 - 6$

$3r = 24$

$\frac{3r}{3} = \frac{24}{3}$

$r = 8$

13. $43 = -6x - 5$

$43 + 5 = -6x - 5 + 5$

$48 = -6x$

$\frac{48}{-6} = \frac{-6x}{-6}$

$-8 = x$

14. $-7x - 11 + 8x = -4$

$x - 11 = -4$

$x - 11 + 11 = -4 + 11$

$x = 7$

15. $5x-(2x-1)=2$

$5x-2x+1=2$

$3x+1=2$

$3x+1-1=2-1$

$3x=1$

$\frac{3x}{3}=\frac{1}{3}$

$x=\frac{1}{3}$

4.

16. $-7x-7=1+9x$

$-7x-7+7=1+9x+7$

$-7x=9x+8$

$-7x-9x=9x+8-9x$

$-16x=8$

$\frac{-16x}{-16}=\frac{8}{-16}$

$x=\frac{8(1)}{8(-2)}$

$x=\frac{1}{-2}$

$x=-\frac{1}{2}$

5.

(17) $3x - 8 = 4(x+1)$

$3x - 8 = 4x + 4$

$3x - 8 + 8 = 4x + 4 + 8$

$3x = 4x + 12$

$3x - 4x = 4x + 12 - 4x$

$-1x = 12$

$\frac{-1x}{-1} = \frac{12}{-1}$

$x = -12$

(18) $\frac{5x}{2} + 3 = \frac{1}{7}$ LCD = 14

$\frac{5x}{2} + \frac{3}{1} = \frac{1}{7}$

$\frac{5x}{2}(14) + \frac{3}{1}(14) = \frac{1}{7}(14)$ Mult by LCD

$5x(7) + 3(14) = 1(2)$

$35x + 42 = 2$

$35x + 42 - 42 = 2 - 42$

$35x = -40$

$\frac{35x}{35} = \frac{-40}{35}$

$x = \frac{-8(5)}{7(5)}$

$x = -\frac{8}{7}$

19. $\frac{13x}{10} + \frac{6}{5} = \frac{6x}{5}$ LCD = 10

6.

Mult by LCD

$\frac{13x}{10}(10) + \frac{6}{5}(10) = \frac{6x}{5}(10)$

$13x(1) + 6(2) = 6x(2)$

$13x + 12 = 12x$

$13x + 12 - 12 = 12x - 12$

$13x = 12x - 12$

$13x - 12x = 12x - 12 - 12x$

$x = -12$

20. $\frac{r+6}{5} = \frac{r+8}{7}$ Cross multiply

$7(r+6) = 5(r+8)$

$7r + 42 = 5r + 40$

$7r + 42 - 42 = 5r + 40 - 42$

$7r = 5r - 2$

$7r - 5r = 5r - 2 - 5r$

$2r = -2$

$\frac{2r}{2} = \frac{-2}{2}$

$r = -1$

(21) $-46.8 = -5.2x$

$\frac{-46.8}{-5.2} = \frac{-5.2x}{-5.2}$

$9 = x$

7.

(22) $x + 7.1x = 234.9$

$1.00x + 7.1x = 234.9$

$8.1x = 234.9$

$\frac{8.1x}{8.1} = \frac{234.9}{8.1}$

$x = 29$

(23) $-0.03(30) + 0.50x = 0.30(30 + x)$

$-.9 + 0.50x = 9 + 0.30x$

$-.9 + 0.50x + .9 = 9 + 0.30x + .9$

$0.50x = 0.30x + 9.9$

$0.50x - 0.30x = 0.30x + 9.9 - 0.30x$

$.20x = 9.9$

$\frac{.20x}{.20} = \frac{9.9}{.20}$

$x = 49.5$

or

$x = 50$

Found

(24) $-7x+5+5x=-2x+10$

$-2x+5=-2x+10$

$-2x+5-5=-2x+10-5$

$-2x=-2x+5$

$-2x+2x=-2x+5+2x$

$0 \neq 5$

$\emptyset$ OR $\{\}$

(25.) $2(x+3)=(2x+6)$

$2x+6=2x+6$

$2x+6-6=2x+6-6$

$2x=2x$

$2x-2x=2x-2x$

$0=0$

all real Numbers
identity
$\{x \mid x \in R\}$

(26.) $\frac{x}{2}+\frac{1}{6}=\frac{6x+2}{12}$ LCD = 12

$\frac{x}{2}(12)+\frac{1}{6}(12)=\left(\frac{6x+2}{12}\right)(12)$

$x(6)+1(2)=(6x+2)(1)$

$6x+2=6x+2$

$6x+x-x=6x+x-x$

$6x=6x$

$6x-6x=6x-6x$

$0=0$

all real numbers, identity
$\{x \mid x \in R\}$

(27) $P = 2L + 2W$, $P = 28$, $W = 9$

$28 = 2L + 2(9)$

$28 = 2L + 18$

$28 - 18 = 2L + 18 - 18$

$10 = 2L$

$\frac{10}{2} = \frac{2L}{2}$

$5 = L$

(28) $V = \frac{1}{3}Bh$, $V = 48$, $h = 8$

$48 = \frac{1}{3}B(8)$

$48 = \frac{8}{3}B$

$\frac{3}{8}(48) = \frac{3}{8}\left(\frac{8}{3}B\right)$

$3(6) = B$

$18 = B$

(29) $I = prt$, $I = 44.8$, $p = 160$, $r = 0.04$

$44.8 = 160(0.04)t$

$44.8 = 6.4t$

$\frac{44.8}{6.4} = \frac{6.4t}{6.4}$

$7 = t$

30. $C = \frac{5}{9}(F-32)$ $F=167$

$C = \frac{5}{9}(167-32)$

$C = \frac{5}{9}(135)$

$C = 5(15)$

$C = 75$

10.

31. $V = \pi r^2 h$, $r=6$, $h=7$, $\pi = 3.14$

$V = 3.14(6)^2(7)$

$V = 3.14(6)(6)(7)$

$V = 3.14(36)(7)$

$V = 3.14(252)$

$V = 791.28$

$\frac{791.28}{10} = 79.128 \equiv 79$ round

32. $A = \pi r^2$ $r=7$, $\pi = 3.14$

$A = 3.14(7)^2$

$A = 3.14(7)(7)$

$A = 3.14(49)$

$A = 153.86$

33. $C = 2\pi r$ solve for r

$\frac{C}{2\pi} = \frac{2\pi r}{2\pi}$

$\frac{C}{2\pi} = r$

(34) $A = LW$ Solve for W

$$\frac{A}{L} = \frac{LW}{L}$$

$$\frac{A}{L} = W$$

11.

(35) $I = Prt$ Solve for r

$$\frac{I}{Pt} = \frac{Prt}{Pt}$$

$$\frac{I}{Pt} = r$$

(36) $V = \frac{1}{3}Ah$ Solve for h

$$3V = 3\left(\frac{1}{3}\right)Ah$$

$$3V = Ah$$

$$\frac{3V}{A} = \frac{Ah}{A}$$

$$\frac{3V}{A} = h$$

(37) $P = a + b + c$ Solve for c

$$P - a = a + b + c - a$$

$$P - a = b + c$$

$$P - a - b = b + c - b$$

$$P - a - b = c$$

(38) $A = P + PRT$ Solve for R

$A - P = P + PRT - P$

$A - P = PRT$

$\frac{A-P}{PT} = \frac{PRT}{PT}$

$\frac{A-P}{PT} = R$

(39) $A = \frac{1}{2}h(B+b)$ Solve for B

$2A = 2(\frac{1}{2})h(B+b)$

$2A = h(B+b)$

$2A = hB + hb$

$2A - hb = hB + hb - hb$

$2A - hb = hB$

$\frac{2A-hb}{h} = \frac{hB}{h}$

$\frac{2A-hb}{h} = B$ OR $\frac{2A-bh}{h} = B$

(40) $4x - 5y = 2$ Solve for y

$4x - 5y - 4x = 2 - 4x$

$-5y = 2 - 4x$

$\frac{-5y}{-5} = \frac{2-4x}{-5}$

$y = \frac{-4x+2}{-5}$

$\rightarrow y = \frac{-1(-4x+2)}{-1(-5)}$

$y = \frac{4x-2}{5}$

(41.) $14x+9y=10$ Solve for y

$14x+9y-14x=10-14x$

$9y=10-14x$

$\frac{9y}{9}=\frac{10-14x}{9}$

$y=\frac{10-14x}{9}$

(42.) The sum of a number and three is negative eleven. Find the number.

$x+3=-11$

$x+3-3=-11-3$

$x=-14$

(43.) Six times a number, added to 18, is 36. Find the number.

$6x+18=36$

$6x+18-18=36-18$

$6x=18$

$\frac{6x}{6}=\frac{18}{6}$

$x=3$

(44) 2 times a number less than 7 times the same number is 35. Find the number.

$7x - 2x = 35$

$5x = 35$

$\frac{5x}{5} = \frac{35}{5}$

$x = 7$

14

(45) What is 10% of 400?

$.10(400) =$

$40 =$

(46) 11% of students at a university attended a lecture. If 4000 students are enrolled at the University, about how many students attended the lecture?

$.11(4000) =$

$440 =$

(47) Logan bought stocks and later sold them for $823,900, making a profit of 7%. How much did he pay for the stocks

$x + .07x = 823900$

$1.00x + .07x = 823900$

$1.07x = 823900$

$\frac{1.07x}{1.07} = \frac{823900}{1.07}$

$x = \$770,000$

(48) After recieving a discount of 7.5% on its bulk order of typewriter ribbons, John's Office Supply pays $4810. What was the price of the order before the discount?

$X - .075X = 4810$

$1.0X - .075X = 4810$

$.925X = 4810$

$\frac{.925X}{.925} = \frac{4810}{.925}$

$X = 5200$

(49) Find two complementary angles such that the measure of the first angle is X°, and the measure of the second angle is $(3X-2)^\circ$.

$(X) + (3X-2) = 90$

$X + 3X - 2 = 90$

$4X - 2 = 90$

$4X - 2 + 2 = 92 + 2$

$4X = 92$

$\frac{4X}{4} = \frac{92}{4}$

$X = 23$

Subst

$3X - 2 =$

$3(23) - 2 =$

$69 - 2 =$

$67 =$

(50) Find two supplementary angles such that the first angle is 30° more than 5 times the second.

$(5x+30)+x=180$

$5x+30+x=180$

$6x+30=180$

$6x+30-30=180-30$

$6x=150$

$\frac{6x}{6}=\frac{150}{6}$

$x=25$

Subst

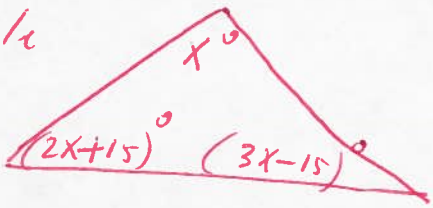
$5x+30=$

$5(25)+30=$

$125+30=$

$155=$

(51) Find the measure of each angle of the triangle



$(x)+(2x+15)+(3x-15)=180$

$x+2x+15+3x-15=180$

$6x=180$

$\frac{6x}{6}=\frac{180}{6}$

$x=30$

Subst

$2x+15=$

$2(30)+15=$

$60+15=$

75

Subst

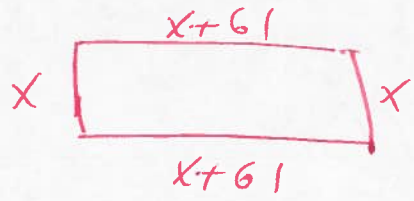
$3x-15=$

$3(30)-15=$

$90-15=$

$75=$

(52) A rectangular carpet has a perimeter of 198 inches. The length of the carpet is 61 inches more than the width. What are the dimensions of the carpet?



$P = 2L + 2W$

$198 = 2(x+61) + 2(x)$

$198 = 2x + 122 + 2x$

$198 = 4x + 122$

$198 - 122 = 4x + 122 - 122$

$76 = 4x$

$\frac{76}{4} = \frac{4x}{4}$

$19 = x$

Subst

$x + 61 =$

$(19) + 61 =$

$80 =$

(53) A motorcycle traveling at 50 miles per hour overtakes a car traveling at 30 miles per hour that had a three-hour head start. How far from the starting point are the two vehicles?

$50x - 30x = 90$

$20x = 90$

$\frac{20x}{20} = \frac{90}{20}$

$x = 4.5$

Subst

$50(4.5) =$

$225 =$

(54) Two cars start from the same point and travel in the same direction. If one car is traveling 60 miles per hour and the other car is traveling at 56 miles per hour, how far apart will they be after 8 hours?

$60x - 56x =$ → Subst

$4x =$ $4(8) =$

$32 =$

32

(55) $x > -2$ Graph

$(-2, \infty)$

(56) $x \geq 3$ Graph

$[3, \infty)$

(57)

use interval notation

$(-\infty, -1]$

(58)

use interval notation

$(-\infty, 3)$

(59) use interval notation

$[-6, 1)$

(60) $x - 3 < -5$

$x - 3 + 3 < -5 + 3$

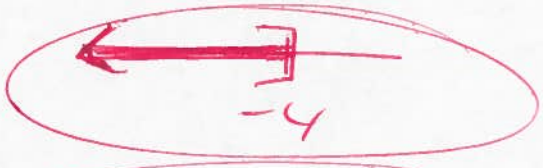
$x < -2$

$(-\infty, -2)$

(61) $x - 1 \leq -5$

$x - 1 + 1 \leq -5 + 1$

$x \leq -4$



$(-\infty, -4]$

(62) $x + 5 < 1$

$x + 5 - 5 < 1 - 5$

$x < -4$

$(-\infty, -4)$

(63) $7x \geq -21$

$\frac{7x}{7} \geq \frac{-21}{7}$

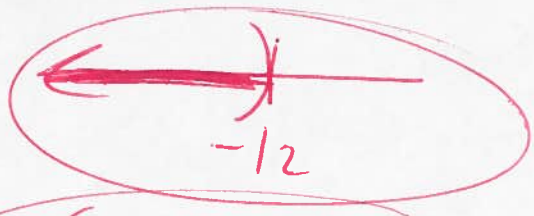
$x \geq -3$

$[-3, \infty)$

(64) $-3x > 36$

$\frac{-3x}{-3} < \frac{36}{-3}$

$x < -12$



$(-\infty, -12)$

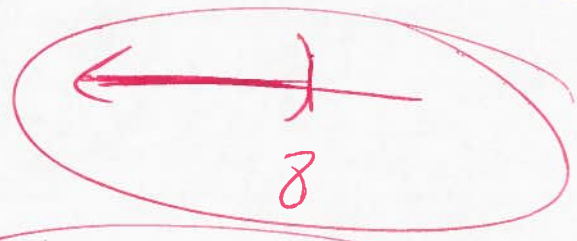
(65.) $2x + 6 < 22$

$2x + 6 - 6 < 22 - 6$

$2x < 16$

$\frac{2x}{2} < \frac{16}{2}$

$x < 8$



$(-\infty, 8)$

(66) $6x + 3 > 5x - 1$

$6x + 3 - 3 > 5x - 1 - 3$

$6x > 5x - 4$

$6x - 5x > 5x - 4 - 5x$

$x > -4$

$(-4, \infty)$

(67.) $1.4x - 3.8 > 0.7x - 1.07$

$1.4x - 3.8 + 3.8 > 0.7x - 1.07 + 3.8$

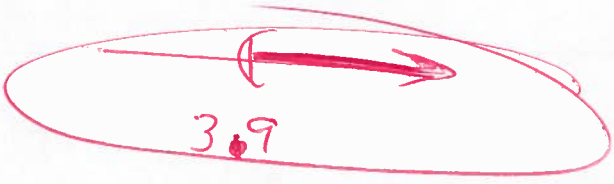
$1.4x > 0.7x + 2.73$

$1.4x - 0.7x > 0.7x + 2.73 - 0.7x$

$.7x > 2.73$

$\frac{.7x}{.7} > \frac{2.73}{.7}$

$x > 3.9$



$(3.9, \infty)$

(68) $6x-2<7(x-3)$

$6x-2<7x-21$

$6x-2+2<7x-21+2$

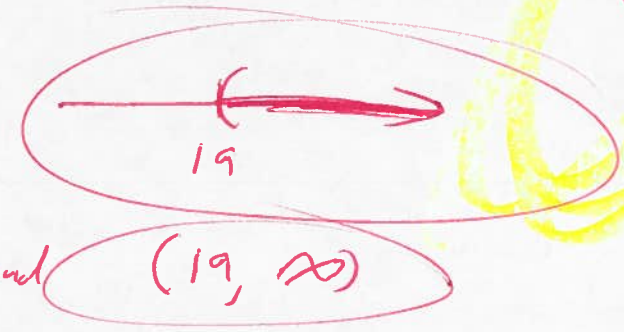
$6x<7x-19$

$6x-7x<7x-19-7x$

$-1x<-19$

$\frac{-1x}{-1} > \frac{-19}{-1}$ Turn the alligator around

$x>19$



$(19, \infty)$

(69) $35x+35>5(6x+6)$

$35x+35>30x+30$

$35x+35-35>30x+30-35$

$35x>30x-5$

$35x-30x>30x-5-30x$

$5x>-5$

$\frac{5x}{5} > \frac{-5}{5}$

$x>-1$

$(-1, \infty)$

(70) $5-3(1-x)\leq 11$

$5-3+3x\leq 11$

$2+3x\leq 11$

$2+3x-2\leq 11-2$

$3x\leq 9$

$\frac{3x}{3} \leq \frac{9}{3}$

$x\leq 3$

$(-\infty, 3]$

21.

(71) Decide whether or not the ordered pair is a solution to the equation.

$4x+2y=16$ $(2,4)$ $x\ y$

$4(2)+2(4)=16$

$8+8=16$

$16=16$ ✓ (Yes)

(72) Decide whether or not the ordered pair is a solution to the equation

$3x-5y=35$, $(5,4)$ $x\ y$

$3(5)-5(4)=35$

$15-20=35$

$-5\neq 35$ (No)

(73) Find an ordered pair that satisfies the equation $y=-x+9$ by letting $x=5$

$y=-(5)+9$

$y=-5+9$

$y=4$

$(x,y)=(5,4)$

(74) Find an ordered pair that satisfies the equation $4x+y=-34$ by letting $x=-9$

$4(-9)+y=-34$

$-36+y=-34$

$-36+y+36=-34+36$

$y=2$

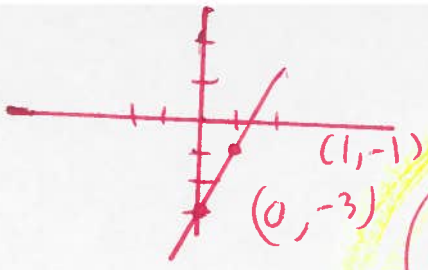
$(x,y)=(-9,2)$

75. Graph $y = 2x - 3$

$y = 2(0) - 3$
$y = 0 - 3$
$y = -3$

$y = 2(1) - 3$
$y = 2 - 3$
$y = -1$

x	y
0	-3
1	-1



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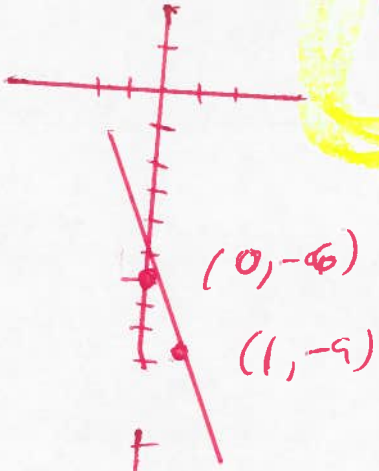
76. Graph $y = -3x - 6$

$y = -3(0) - 6$
$y = 0 - 6$
$y = -6$

$y = -3(1) - 6$
$y = -3 - 6$
$y = -9$

x	y
0	-6
1	-9

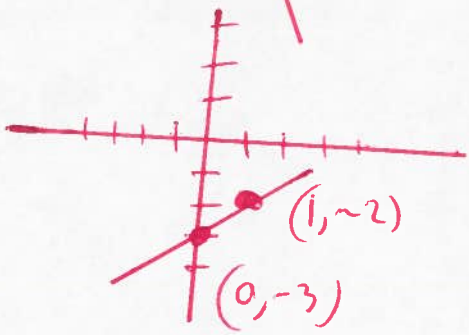


77. Graph $y = x - 3$

$y = (0) - 3$
$y = 0 - 3$
$y = -3$

$y = (1) - 3$
$y = 1 - 3$
$y = -2$

x	y
0	-3
1	-2



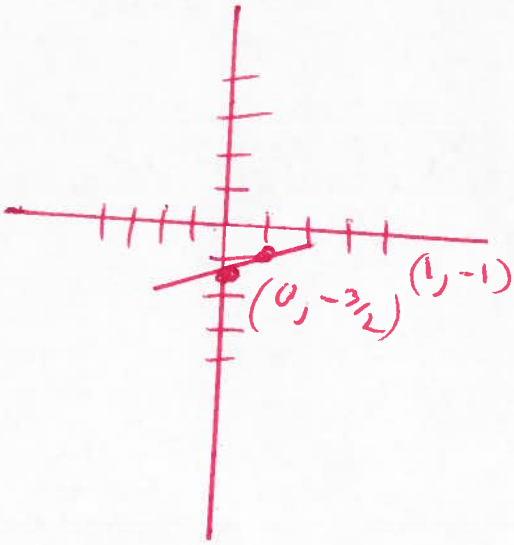
78. Graph $6y - 3x = -9$

$6y - 3x + 3x = -9 + 3x$
$6y = 3x - 9$
$\frac{6y}{6} = \frac{3x}{6} - \frac{9}{6}$
$y = \frac{1}{2}x - \frac{3}{2}$

$y = \frac{1}{2}(0) - \frac{3}{2}$
$y = 0 - \frac{3}{2}$
$y = -\frac{3}{2}$

$y = \frac{1}{2}(1) - \frac{3}{2}$
$y = \frac{1}{2} - \frac{3}{2}$
$y = \frac{1-3}{2}$
$y = \frac{-2}{2}$
$y = -1$

x	y
0	$-\frac{3}{2}$
1	-1



79. Graph

$-5x - 10y = 30$

$-5x - 10y + 5x = 30 + 5x$

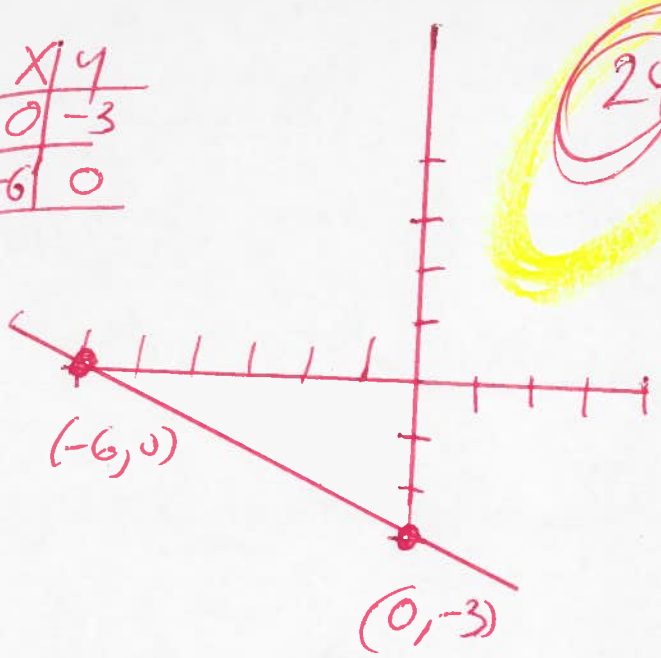
$-10y = 30 + 5x$

$\frac{-10y}{-10} = \frac{30}{-10} + \frac{5x}{-10}$

$y = -3 - \frac{1}{2}x$

$y = -\frac{1}{2}x - 3$

x	y
0	-3
-6	0



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$y = -\frac{1}{2}(0) - 3$

$y = 0 - 3$

$y = -3$

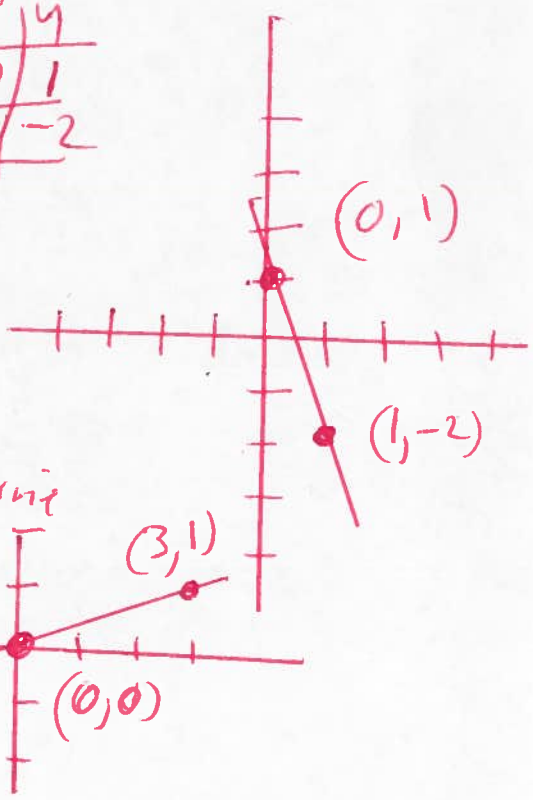
$y = -\frac{1}{2}(-6) - 3$

$y = 3 - 3$

$y = 0$

80. Graph $y = -3x + 1$

x	y
0	1
1	-2



$y = -3(0) + 1$

$y = 0 + 1$

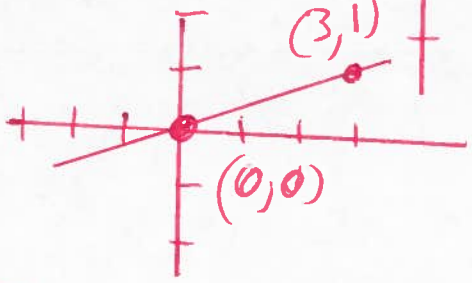
$y = 1$

$y = -3(1) + 1$

$y = -3 + 1$

$y = -2$

81. Find the slope of the line through the points.



$m = \frac{y_1 - y_2}{x_1 - x_2}$ $(0,0)$ $(3,1)$ $x_1\ y_1$ $x_2\ y_2$

$m = \frac{(0) - (1)}{(0) - (3)}$

$m = \frac{0 - 1}{0 - 3}$

$m = \frac{-1}{-3}$

$m = \frac{1}{3}$ ← slope

(82) Find the slope of the line through the two points $(1, -3)$ and $(7, 8)$

$x_1 \; y_1$ $\quad$ $x_2 \; y_2$

25

$$m = \frac{y_1 - y_2}{x_1 - x_2}$$

$$m = \frac{(-3) - (8)}{(1) - (7)}$$

$$m = \frac{-3 - 8}{1 - 7}$$

$$m = \frac{-11}{-6}$$

$$m = \frac{11}{6}$$ slope

(83) Find the slope of the line through the two points $(1, -5)$ and $(-9, 6)$

$x_1 \; y_1$ $\quad$ $x_2 \; y_2$

$$m = \frac{y_1 - y_2}{x_1 - x_2}$$

$$m = \frac{(-5) - (6)}{(1) - (-9)}$$

$$m = \frac{-5 - 6}{1 + 9}$$

$$m = \frac{-11}{10}$$

(84) Find the slope of the line through the two points $(-4, 7)$ and $(-3, -5)$

x_1, y_1 $\quad$ x_2, y_2

$$m = \frac{y_1 - y_2}{x_1 - x_2}$$

$$m = \frac{(7) - (-5)}{(-4) - (-3)}$$

$$m = \frac{7+5}{-4+3}$$

$$m = \frac{12}{-1}$$

$$= -12$$

(85.) Graph

$$y = -3x - 6$$

$$y = -3(0) - 6$$

$$y = 0 - 6$$

$$y = -6$$

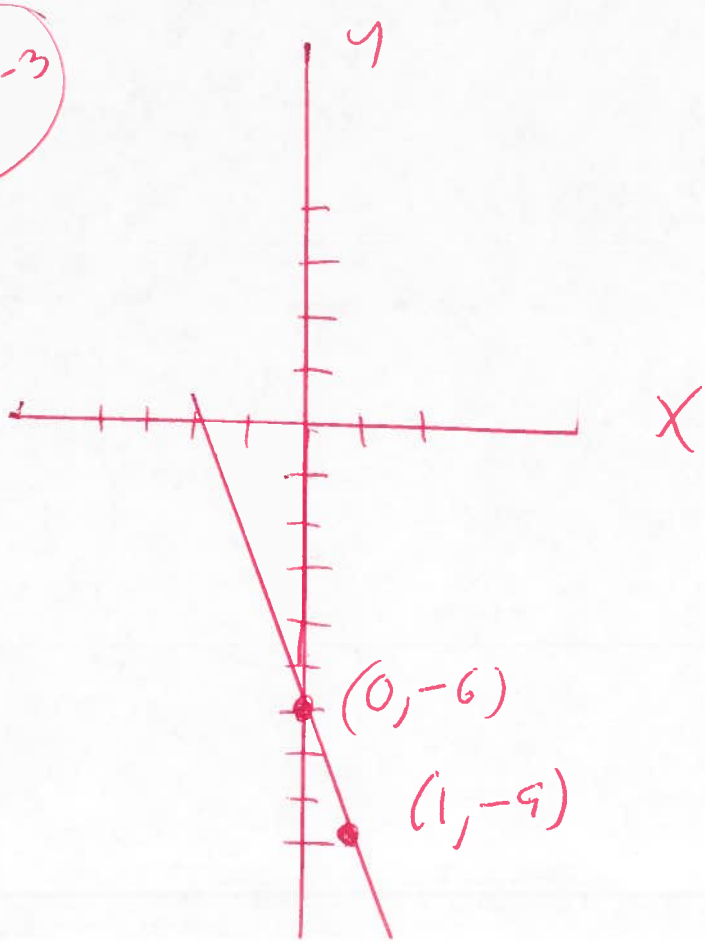
$m = -3$

x	y
0	-6
1	-9

$$y = -3(1) - 6$$

$$y = -3 - 6$$

$$y = -9$$



(86) Graph $y = \frac{1}{2}x + 2$

$y = \frac{1}{2}(0) + 2$

$y = 0 + 2$

$y = 2$

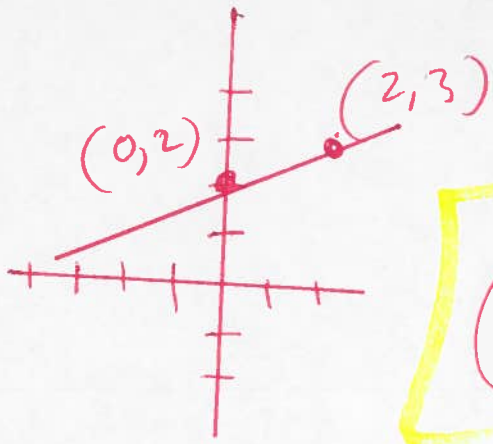
$m = \frac{1}{2}$

$y = \frac{1}{2}(2) + 2$

$y = 1 + 2$

$= 3$

x	y
0	2
2	3



(87)

(87.) Find the slope and the y-intercept

$y = 3x + 11$ $y = mx + b$

slope $= m = 3$ and y-intercept $= (0, 11)$ OR $b = 11$

(88.) Find the slope and the y-intercept

$y = \frac{2}{3}x + \frac{5}{6}$ $y = mx + b$

slope $= m = \frac{2}{3}$ and y-intercept $= (0, \frac{5}{6})$ OR $b = \frac{5}{6}$

(89.) Find the slope and the y-intercept

$3x + y = 4$ $y = mx + b$

$3x + y - 3x = 4 - 3x$

$y = 4 - 3x$

$y = -3x + 4$

slope $= m = -3$ and y-intercept $= (0, 4)$ OR $b = 4$

(90.) Find the slope and the y-intercept

$7x - 3y = -11$ $\quad y = mx + b$

28.

$7x - 3y - 7x = -11 - 7x$

$-3y = -11 - 7x$

$\frac{-3y}{-3} = \frac{-11}{-3} - \frac{7x}{-3}$

$y = \frac{11}{3} + \frac{7x}{3}$

$y = \frac{7}{3}x + \frac{11}{3}$

Slope $= m = \frac{7}{3}$ and y-intercept $= (0, \frac{11}{3})$ or $b = \frac{11}{3}$

(91.) Graph

$y = 5x - 6$

x	y
0	−6
1	−1

$y = 5(0) - 6$

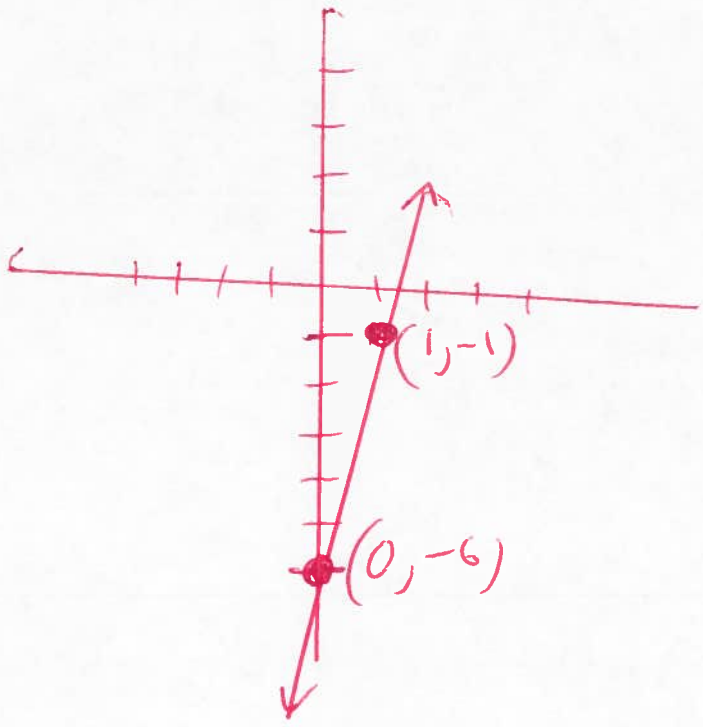
$y = 0 - 6$

$y = -6$

$y = 5(1) - 6$

$y = 5 - 6$

$y = -1$



92. Graph $y = \frac{1}{2}x + 5$

$y = \frac{1}{2}(0) + 5$

$y = 0 + 5$

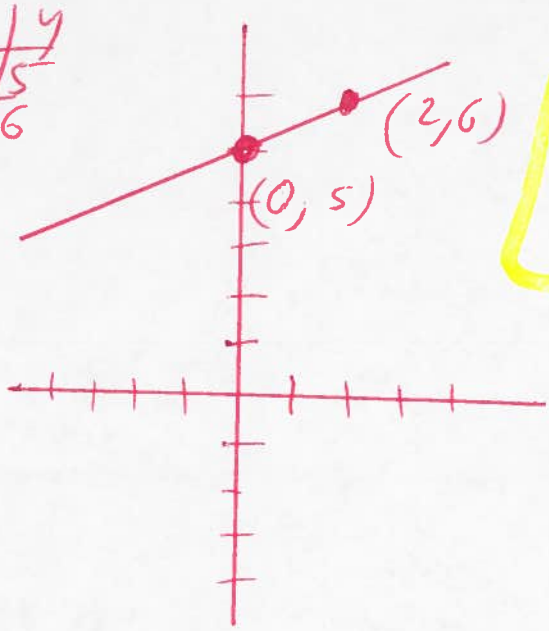
$y = 5$

$y = \frac{1}{2}(2) + 5$

$y = 1 + 5$

$y = 6$

x	y
0	5
2	6



29

93. Graph $y = -\frac{1}{2}x + 2$

$y = -\frac{1}{2}(0) + 2$

$y = 0 + 2$

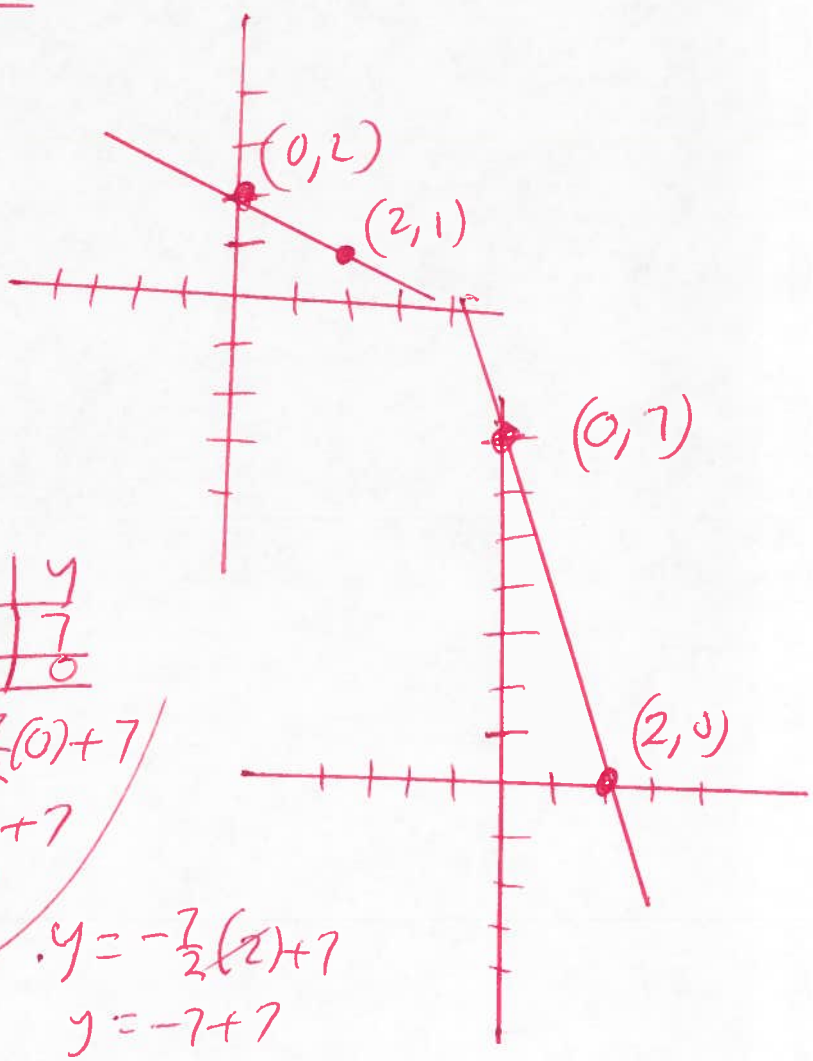
$y = 2$

$y = -\frac{1}{2}(2) + 2$

$y = -1 + 2$

$y = 1$

x	y
0	2
2	1



94. Graph $7x + 2y = 14$

$7x + 2y - 7x = 14 - 7x$

$2y = 14 - 7x$

$\frac{2y}{2} = \frac{14}{2} - \frac{7x}{2}$

$y = 7 - \frac{7x}{2}$

$y = -\frac{7}{2}x + 7$

x	y
0	7
2	0

$y = -\frac{7}{2}(0) + 7$

$y = 0 + 7$

$y = 7$

$y = -\frac{7}{2}(2) + 7$

$y = -7 + 7$

$y = 0$

(95) Find the equation of the line with the given slope and intercept

Slope = $m = -8$ y-intercept = 2

$m = -8$ $(0, 2)$ x_1 y_1

30.

Point Slope formula

$y - y_1 = m(x - x_1)$

$y - (2) = -8(x - (0))$

$y - 2 = -8(x - 0)$

$y - 2 = -8(x)$

$y - 2 = -8x$

$y - 2 + 2 = -8x + 2$

$y = -8x + 2$

(96.) Find the equation of the line with the given ~~slope and y-intercept~~ AND Point $(4, 3)$

Slope $= m = -3$ x_1 y_1

Point Slope formula

$y - y_1 = m(x - x_1)$

$y - (3) = -3(x - (4))$

$y - 3 = -3(x - 4)$

$y - 3 = -3x + 12$

$y - 3 + 3 = -3x + 12 + 3$

$y = -3x + 15$

97. Find the equation of the line with the given point and slope.

Slope $= m = -2$ point $(-2, -7)$ x_1, y_1

Point slope formula

$$y - y_1 = m(x - x_1)$$

$$y - (-7) = -2(x - (-2))$$

$$y + 7 = -2(x + 2)$$

$$y + 7 = -2x - 4$$

$$y + 7 - 7 = -2x - 4 - 7$$

$$y = -2x - 11$$

31

98. Determine if the lines are parallel, perpendicular, or neither

L1 $y = x - 6$

L2 $y = 2 - x$ rewrite $\rightarrow$ $y = -x + 2$

L1 $y = x - 6$ $m_1 = 1$ Slope line 1

L2 $y = -x + 2$ $m_2 = -1$ Slope line 2

$$m_1 \cdot m_2 = (1)(-1) = -1$$

perpendicular

(99.) Determine if the lines are parallel perpendicular, or neither

(L1) $y = 7x + 9$ $m_1 = 7$ Slope

(L2) $y = -7x - 3$ $m_2 = -7$ Slope

$m_1 \cdot m_2 = (7)(-7) = -49$

NOT perpendicular

$m_1 = 7 \neq -7 = m_2$

NOT parallel

NEITHER

(100.) Determine if the lines are parallel perpendicular, or neither

(L1) $y = 7x + 5$ $m_1 = 7$ Slope

(L2) $y = -\frac{1}{7}x + 3$ $m_2 = -\frac{1}{7}$ Slope

$m_1 \cdot m_2 = (7)\left(-\frac{1}{7}\right) = \frac{-7}{7} = -1$

Perpendicular

(10) Determine if lines are parallel perpendicular, or neither

33.

(L1) $6x+2y=8$

(L2) $18x+6y=27$

Solve for y

(L1) $6x+2y=8$

(L1) $6x+2y-6x=8-6x$

(L1) $2y=8-6x$

(L1) $\frac{2y}{2}=\frac{8}{2}-\frac{6x}{2}$

(L1) $y=4-3x$

(L1) $y=-3x+4$

$m_1=-3$

(L2) $18x+6y=27$

(L2) $18x+6y-18x=27-18x$

(L2) $6y=27-18x$

(L2) $\frac{6y}{6}=\frac{27}{6}-\frac{18x}{6}$

(L2) $y=\frac{9}{2}-3x$

(L2) $y=-3x+\frac{9}{2}$

$m_2=-3$

$m_1=m_2$

Parallel

(102) Solve the system of equations using substitution

$x + y = -6$

$y = 2x$

$x + (2x) = -6$

$x + 2x = -6$

$3x = -6$

$\frac{3x}{3} = \frac{-6}{3}$

$x = -2$

Subst

$y = 2x$

$y = 2(-2)$

$y = -4$

$(x, y) = (-2, -4)$ ✓

34.

(103) Solve the system of equations using elimination

$3x + y = -30$

$5x - y = 6$

$8x + 0 = -24$

$8x = -24$

$\frac{8x}{8} = \frac{-24}{8}$

$x = -3$

$3x + y = -30$

$3(-3) + y = -30$

$-9 + y = -30$

$-9 + y + 9 = -30 + 9$

$y = -21$

Subst

(x, y)

$(-3, -21)$

(104) Solve the system of equations using elimination.

$$\begin{array}{r} x+y=-11 \\ x-y=-1 \\ \hline 2x+0=-12 \end{array}$$

$2x = -12$

$\frac{2x}{2} = \frac{-12}{2}$

$x = -6$

Subst $x+y=-11$

$(-6)+y=-11$

$-6+y=-11$

$-6+y+6=-11+6$

$y=-5$

$(x, y) = (-6, -5)$

35

(105) Solve the system of equations using elimination.

$$\begin{array}{r} x+6y=45 \quad (-1) \\ 6x+6y=30 \quad (1) \\ \hline -1x-6y=-45 \\ 6x+6y=30 \\ \hline 5x+0=-15 \end{array}$$

$5x = -15$

$\frac{5x}{5} = \frac{-15}{5}$

$x = -3$

Subst $x+6y=45$

$(-3)+6y=45$

$-3+6y=45$

$-3+6y+3=45+3$

$6y=48$

$\frac{6y}{6} = \frac{48}{6}$

$y=8$

$(x, y) = (-3, 8)$

106. Solve the system of equations using elimination

$$\begin{pmatrix} x-4y=17 \\ -3x-5y=51 \end{pmatrix} \begin{matrix} (-5) \\ (4) \end{matrix}$$

$$-5x+20y=-85$$
$$-12x-20y=204$$

$$-17x+0=119$$

$$-17x=119$$

$$\frac{-17x}{-17}=\frac{119}{-17}$$

$$x=-7$$

Subst

$$x-4y=17$$
$$(-7)-4y=17$$
$$-7-4y=17$$
$$-7-4y+7=17+7$$
$$-4y=24$$
$$\frac{-4y}{-4}=\frac{24}{-4}$$
$$y=-6$$

$$(x,y)=(-7,-6)$$

36

107. Solve the system of equations using elimination.

$$\begin{pmatrix} x+y=4 \\ x+y=-6 \end{pmatrix} \begin{matrix} (-1) \\ (1) \end{matrix}$$

$$-1x-1y=-4$$
$$1x+1y=-6$$

$$0+0=-10$$

$$0\neq -10$$

No solution, inconsistent, $\emptyset$

37.

108. $(-2x^2-5x-6)+(8x^2-5x+4)=$

$-2x^2-5x-6+8x^2-5x+4=$

$6x^2-10x-2=$

109. $(7x^2+20x+5)-(5x^2-4x-12)=$

$7x^2+20x+5-5x^2+4x+12=$

$2x^2+24x+17=$

110. $-2x^2+8x-3=$ Eval if $x=-3$

$-2(-3)^2+8(-3)-3=$

$-2(-3)(-3)+8(-3)-3=$

$-2(9)+8(-3)-3=$

$-18-24-3=$

$-42-3=$

$-45=$

111. $(-8x^9y^8z)^2=$

$((-8)^1x^9y^8z^1)^2=$

$(-8)^{1(2)}x^{9(2)}y^{8(2)}z^{1(2)}=$

$(-8)^2x^{18}y^{16}z^2=$

$(-8)(-8)x^{18}y^{16}z^2=$

$64x^{18}y^{16}z^2=$

38.

112. $(-6z^2)(5z^3) =$

$-30z^{2+3} =$

$-30z^5 =$

113. $(7x^6y)(8x^2y^4) =$

$(7x^6y^1)(8x^2y^4) =$

$56x^{6+2}y^{1+4} =$

$56x^8y^5 =$

114. $(m^3n)^4(-4mn^6) =$

$(m^3n^1)^4(-4m^1n^6) =$

$(m^{3(4)}n^{1(4)})(-4m^1n^6) =$

$(m^{12}n^4)(-4m^1n^6) =$

$-4m^{12+1}n^{4+6} =$

$-4m^{13}n^{10} =$

39.

115. $-11x(6x-4) =$

$-66x^2 + 44x =$

116. $2y^2(3y^2+3y-7) =$

$6y^4 + 6y^3 - 14y^2 =$

117. $(x+3)(x+3) =$

$x^2 + 3x + 3x + 9 =$

$x^2 + 6x + 9 =$

118. $(4y-5)(4y-3) =$

$16y^2 - 12y - 20y + 15 =$

$16y^2 - 32y + 15 =$

119. $(y-1)(y-4) =$

$y^2 - 4y - 1y + 4 =$

$y^2 - 5y + 4 =$

120. $(b-8)(b+1) =$

$b^2 + 1b - 8b - 8 =$

$b^2 - 7b - 8 =$

40.

121. $(4x+3)(x-9) =$

$4x^2 - 36x + 3x - 27 =$

$4x^2 - 33x - 27 =$

122. $(3n+5p)(6n+p) =$

$18n^2 + 3np + 30np + 5p^2 =$

$18n^2 + 33np + 5p^2 =$

123. $(9x+4y)(7x-2y) =$

$63x^2 - 18xy + 28xy - 8y^2 =$

$63x^2 + 10xy - 8y^2 =$

124. $(x+4)(x-4) =$

$x^2 - 4x + 4x - 16 =$

$x^2 - 16 =$

125. $(7p+9)(7p-9) =$

$49p^2 - 63p + 63p - 81 =$

$49p^2 - 81 =$

126. $(2x+5y)(2x-5y) =$

$4x^2 - 10xy + 10xy - 25y^2 =$

$4x^2 - 25y^2 =$

41

127. $(n+15)^2 =$

$(n+15)(n+15) =$

$n^2 + 15n + 15n + 225 =$

$n^2 + 30n + 225 =$

128. $(w-11)^2 =$

$(w-11)(w-11) =$

$w^2 - 11w - 11w + 121 =$

$w^2 - 22w + 121 =$

129. $(4x+3y)^2 =$

$(4x+3y)(4x+3y) =$

$16x^2 + 12xy + 12xy + 9y^2 =$

$16x^2 + 24xy + 9y^2 =$

130. $(6x-11y)^2 =$

$(6x-11y)(6x-11y) =$

$36x^2 - 66xy - 66xy + 121y^2 =$

$36x^2 - 132xy + 121y^2 =$

42.

131. 

find area of square

$A = LW$

$A = (7x-10)(7x-10)$

$A = 49x^2 - 70x - 70x + 100$

$= 49x^2 - 140x + 100$

132. $(y-7)(y^2+7y-4) =$

$y^3 + 7y^2 - 4y - 7y^2 - 49y + 28 =$

$y^3 - 53y + 28 =$

133. $(7x-1)(x^2-4x+1) =$

$7x^3 - 28x^2 + 7x - 1x^2 + 4x - 1 =$

$7x^3 - 29x^2 + 11x - 1 =$

134. $(2y+11)(5y^2-2y-9) =$

$10y^3 - 4y^2 - 18y + 55y^2 - 22y - 99 =$

$10y^3 + 51y^2 - 40y - 99 =$

43.

135. $\frac{56m^{20}n^{14}}{7m^{19}n^{10}} =$

$\frac{\cancel{7}(8)\,m^{20-19}\,n^{14-10}}{\cancel{7}} =$

$8m^{1}n^{4} =$

136. $\frac{24x^{6}y^{11}}{6x^{3}y^{6}} =$

$\frac{\cancel{6}(4)\,x^{6-3}\,y^{11-6}}{\cancel{6}} =$

$4x^{3}y^{5} =$

137. $\left(\frac{5}{6}\right)^{3} =$

$\left(\frac{5}{6}\right)\left(\frac{5}{6}\right)\left(\frac{5}{6}\right) =$

$\frac{125}{216} =$

138. $\left(\frac{6t^{3}}{3s^{4}}\right)^{2} =$

$\left(\frac{2t^{3}}{s^{4}}\right)^{2} =$

$\frac{2^{1(2)}\,t^{3(2)}}{s^{4(2)}} =$

$\frac{2^{2}\,t^{6}}{s^{8}} =$

$\frac{(2)(2)\,t^{6}}{s^{8}} =$

$\frac{4t^{6}}{s^{8}}$

139. $9^0 =$

$1 =$

140. $\left(\frac{5}{7}\right)^0 =$

$1 =$

141. $7^{-1} =$

$\frac{1}{7^1} =$

$\frac{1}{7} =$

142. $3^{-4} =$

$\frac{1}{3^4} =$

$\frac{1}{3 \cdot 3 \cdot 3 \cdot 3} =$

$\frac{1}{81} =$

(143) $(-5x^6y^{-7})(3x^{-1}y) =$

$\frac{-5x^6}{y^7} \cdot \frac{3y}{x} =$

$\frac{-15x^{6-1}}{y^{7-1}} =$

$\frac{-15x^5}{y^6} =$

45.

(144.) $\frac{21r^7 - 35r^4}{7r} =$

$\frac{21r^7}{7r} - \frac{35r^4}{7r} =$

$\frac{3(7)r^7}{7r^1} - \frac{5(7)r^4}{7r^1} =$

$3r^{7-1} - 5r^{4-1} =$

$3r^6 - 5r^3 =$

46.

(145) $\dfrac{24x^2+20x-11}{4x} =$

$\dfrac{24x^2}{4x} + \dfrac{20x}{4x} - \dfrac{11}{4x} =$

$\dfrac{6(4)x^2}{4x^1} + \dfrac{5(4)x}{4x} - \dfrac{11}{4x} =$

$6x^{2-1} + 5(1) - \dfrac{11}{4x} =$

$6x + 5 - \dfrac{11}{4x} =$

(146) $\dfrac{14x^4 - 6x^3 + 8x^2}{2x^3} =$

$\dfrac{14x^4}{2x^3} - \dfrac{6x^3}{2x^3} + \dfrac{8x^2}{2x^3} =$

$\dfrac{2(7)x^4}{2x^3} - \dfrac{2(3)x^3}{2x^3} + \dfrac{2(4)x^2}{2x^3} =$

$7x^{4-3} - 3 + \dfrac{4}{x^{3-2}} =$

$7x^1 - 3 + \dfrac{4}{x^1} =$

OR

$7x - 3 + \dfrac{4}{x} =$

(147) $\frac{x^2+13x+40}{x+8}$

47.

Long Division

$$x+8 \;\overline{)\; x^2+13x+40}$$

$x+5$

$-(x^2+8x)$

$5x+40$

$-(5x+40)$

0 rem

$\frac{x^2+13x+40}{x+8}$ Use Synthetic Division

OPP

$-8 \;|\; 1 \quad 13 \quad 40$

$\qquad\quad -8 \quad -40$

$1 \quad 5 \quad 0$ rem

$x+5$

(148.) $\dfrac{3m^2+17m-56}{m+8}$

(48.)

Long Division

$$\begin{array}{r} 3m-7 \\ m+8\,\overline{)\,3m^2+17m-56} \\ -(3m^2+24m) \\ \hline -7m-56 \\ -(-7m-56) \\ \hline 0 \end{array}$$

(0) rem

$\dfrac{3m^2+17m-56}{m+8}$ Use Synthetic Division

opp

-8	3	17	-56
		-24	56
	3	-7	(0) rem

$3m-7$

(149) $4x^5 + 16x^3 =$ Factor GCF

$4x^3(x^2 + 4) =$

49.

(150) $20x^5y + 36xy^6 =$ Factor GCF

$20x^5y^1 + 36x^1y^6 =$

$4x^1y^1(5x^4 + 9y^5) =$

(151.) $5x + 50 + xy + 10y =$ Factor by Grouping

$(5x + 50) + (xy + 10y) =$

$5(x + 10) + y(x + 10) =$

$(x + 10)(5 + y) =$

(152.) $3x - 36 + xy - 12y =$ Factor by Grouping

$(3x - 36) + (xy - 12y) =$

$3(x - 12) + y(x - 12) =$

$(x - 12)(3 + y) =$

153. $x^2+x-20=$

$(x-4)(x+5)=$

20.1
10.2
4.5
Factor

154. $x^2+2x-35=$

$(x-5)(x+7)=$

35.1
5.7
Factor

155. $x^2-x-12=$

$(x+3)(x-4)=$

12.1
6.2
3.4
Factor

156. $x^2-6x+8=$

$(x-2)(x-4)=$

8.1
2.4
Factor

157. $x^2+13xy+36y^2=$

$(x+4y)(x+9y)=$

36.1
18.2
12.3
4.9
Factor

158. $4x^2+12x-40=$

$4(x^2+3x-10)=$

$4(x-2)(x+5)=$

10.1
2.5
Factor

159. $6x^2-x-7=$

$(6x-7)(x+1)=$

6.1
2.3
1.7
Factor

50.

160. $81x^2 - 64 =$

$a^2 - b^2 = (a+b)(a-b)$ Factor

$(9x)^2 - (8)^2 =$

$(9x+8)(9x-8) =$

51.

161. $4x^2 - \frac{4}{9} =$

$a^2 - b^2 = (a+b)(a-b)$ Factor

$(2x)^2 - (\frac{2}{3})^2 =$

$(2x + \frac{2}{3})(2x - \frac{2}{3}) =$

162. $81x^2 - 16y^2 =$

$a^2 - b^2 = (a+b)(a-b)$ Factor

$(9x)^2 - (4y)^2 =$

$(9x+4y)(9x-4y) =$

163. $a^2 - 2ab - 24b^2 =$

24.1
12.2
6.4
3.8

Factor

$(a + 4b)(a - 6b) =$

164. $x^3 - 5x^2 - 6x =$

6.1
2.3

Factor

$x(x^2 - 5x - 6) =$

$x(x+1)(x-6) =$

165. $5y^3 - 5y^2 - 100y =$

20.1
10.2
4.5

Factor

$5y(y^2 - y - 20) =$

$5y(y+4)(y-5) =$

52.

166. Solve

$X(4X+12)=0$

Set $X=0$ OR $4X+12=0$

OR $4X+12-12=0-12$

$4X=-12$

$\frac{4X}{4}=\frac{-12}{4}$

$X=-3$

$\{0,-3\}$

167. Solve

$5X(6X+30)=0$

Set $5X=0$ OR $6X+30=0$

$\frac{5X}{5}=\frac{0}{5}$ OR $6X+30-30=0-30$

$X=0$ OR $6X=-30$

$\frac{6X}{6}=\frac{-30}{6}$

$X=-5$

$\{0,-5\}$

168. Solve

$(Y-7)(9Y+26)=0$

Set $Y-7=0$ OR $9Y+26=0$

$Y-7+7=0+7$ OR $9Y+26-26=0-26$

$Y=7$ OR $9Y=-26$

OR $\frac{9Y}{9}=\frac{-26}{9}$

$Y=-\frac{26}{9}$

$\{7,-\frac{26}{9}\}$

53.

169. Solve

$12n^2 + 44n = 0$

$4n(3n+11) = 0$

Set $4n = 0$ OR $3n+11 = 0$

$\frac{4n}{4} = \frac{0}{4}$ OR $3n+11-11 = 0-11$

$n = 0$ OR $3n = -11$

OR $\frac{3n}{3} = \frac{-11}{3}$

$n = -\frac{11}{3}$

$\{0, -\frac{11}{3}\}$

170. Solve

$x^2 + 2x - 48 = 0$

$(x-6)(x+8) = 0$

48.1
24.2
12.4
6.8

Set $x-6=0$ OR $x+8=0$

$x-6+6 = 0+6$ OR $x+8-8 = 0-8$

$x = 6$ OR $x = -8$

$\{6, -8\}$

171. Solve

$x^2 - 17x + 72 = 0$

$(x-8)(x-9) = 0$

72.1
36.2
18.4
9.8

Set $x-8=0$ OR $x-9=0$

$x-8+8 = 0+8$ OR $x-9+9 = 0+9$

$x = 8$ OR $x = 9$

$\{8, 9\}$

172. Solve

$2x^2 - 3x - 5 = 0$

$(2x - 5)(x + 1) = 0$

Set $2x - 5 = 0$ OR $x + 1 = 0$

$2x - 5 + 5 = 0 + 5$ OR $x + 1 - 1 = 0 - 1$

$2x = 5$ OR $x = -1$

$\frac{2x}{2} = \frac{5}{2}$

$x = \frac{5}{2}$

2.1 1.5 5%

$\{\frac{5}{2}, -1\}$

173. Solve

$x^2 - x = 42$

$x^2 - x - 42 = 42 - 42$

$x^2 - x - 42 = 0$

$(x + 6)(x - 7) = 0$

42.1
21.2
14.3
6.7

Set $x + 6 = 0$ OR $x - 7 = 0$

$x + 6 - 6 = 0 - 6$ OR $x - 7 + 7 = 0 + 7$

$x = -6$ OR $x = 7$

$\{-6, 7\}$

174. Solve $x^2 = 2x$

$x^2 - 2x = 2x - 2x$

$x^2 - 2x = 0$

$x(x - 2) = 0$

Set $x = 0$ OR $x - 2 = 0$

OR $x - 2 + 2 = 0 + 2$

$x = 2$

$\{0, 2\}$

175. $\frac{y^2+12y+27}{y^2+13y+36} =$ simplify

27 · 1
3 · 9

36 · 1
18 · 2
12 · 3
4 · 9

55x

$\frac{(y+3)(y+9)}{(y+4)(y+9)} =$

$\frac{y+3}{y+4} =$

176. $\frac{8m^2p^1}{33p^4} \cdot \frac{11m^1p^3}{24m^7} =$

$\frac{(8)(11)m^3p^4}{(33)(24)p^4m^7} =$

$\frac{(8)(11)}{(3)(11)(3)(8)m^{7-3}} =$

$\frac{1}{9m^4} =$

177. $\frac{z^2-12z+36}{z^2-9} \cdot \frac{z^2-3z}{z-6} =$

$\frac{(z-6)(z-6)}{(z+3)(z-3)} \cdot \frac{z(z-3)}{(z-6)} =$

$\frac{z(z-6)}{(z+3)} =$

(178) $\frac{4m^9n^3}{5m} \div \frac{9m^3n^8}{8n^3}$

$\frac{4m^9n^3}{5m} \cdot \frac{8n^3}{9m^3n^8} =$

$\frac{32m^9n^6}{45m^4n^8} =$

$\frac{32m^{9-4}}{45n^{8-6}} =$

$\frac{32m^5}{45n^2} =$

(179) $\frac{x^2-8x+16}{3x-12} \div \frac{2x-8}{6} =$

$\frac{x^2-8x+16}{3x-12} \cdot \frac{6}{2x-8} =$

$\frac{(x-4)(x-4)}{3(x-4)} \cdot \frac{6}{2(x-4)} =$

$1 =$

$a^2-b^2=(a+b)(a-b)$

57

(180) $\dfrac{x^2-3x}{x^2-9} \div \dfrac{x+3}{x^2+6x+9} =$

$\dfrac{x^2-3x}{x^2-9} \cdot \dfrac{x^2+6x+9}{x+3} =$

$\dfrac{x(x-3)}{(x+3)(x-3)} \cdot \dfrac{(x+3)(x+3)}{(x+3)} =$

$x =$

(181) $\dfrac{m^2-9m}{m-6} + \dfrac{18}{m-6} =$

$\dfrac{(m^2-9m)+(18)}{m-6} =$

$\dfrac{m^2-9m+18}{m-6} =$

$\dfrac{(m-3)(m-6)}{m-6} =$

$m-3 =$

(182) $\frac{x-5}{9} = \frac{x+3}{5}$

Cross Multiply

$5(x-5) = 9(x+3)$

$5x - 25 = 9x + 27$

$5x - 25 + 25 = 9x + 27 + 25$

$5x = 9x + 52$

$5x - 9x = 9x + 52 - 9x$

$-4x = 52$

$\frac{-4x}{-4} = \frac{52}{-4}$

$x = -13$

(183) $\frac{3}{x} - \frac{1}{4} = \frac{5}{x}$

Mult by LCD $= 4x$

$\frac{3}{x}(4x) - \frac{1}{4}(4x) = \frac{5}{x}(4x)$

$3(4) - 1(x) = 5(4)$

$12 - 1x = 20$

$12 - 1x - 12 = 20 - 12$

$-1x = 8$

$\frac{-1x}{-1} = \frac{8}{-1}$

$x = -8$

(184) $\frac{2}{5x} - \frac{5}{3} = \frac{2}{15x} - \frac{5}{45}$

Mult by the LCD $= 45x$

59

$\frac{2}{5x}(45x) - \frac{5}{3}(45x) = \frac{2}{15x}(45x) - \frac{5}{45}(45x)$

$2(9) - 5(15x) = 2(3) - 5(x)$

$18 - 75x = 6 - 5x$

$-18 - 75x - 18 = 6 - 5x - 18$

$-75x = -5x - 12$

$-75x + 5x = -5x - 12 + 5x$

$-70x = -12$

$\frac{-70x}{-70} = \frac{-12}{-70}$

$x = \frac{12}{70}$

$x = \frac{2(6)}{2(35)}$

$x = \frac{6}{35}$

(185.) Find $f(14)$ when $f(x) = 2x + 12$

$f(14) = 2(14) + 12$

$f(14) = 28 + 12$

$f(14) = 40$

(186.) Find $f(5)$ when $f(x) = -7x + 6$

$f(5) = -7(5) + 6$

$f(5) = -35 + 6$

$f(5) = -29$

(187) Find $f(x-3)$ when $f(x) = -5x - 7$

$f(x-3) = -5(x-3) - 7$

$f(x-3) = -5x + 15 - 7$

$f(x-3) = -5x + 8$

(188) Find $f(3)$ when $f(x) = x^2 + 3x - 4$

$f(3) = (3)^2 + 3(3) - 4$

$f(3) = (3)(3) + 3(3) - 4$

$f(3) = 9 + 9 - 4$

$f(3) = 18 - 4$

$f(3) = 14$

(189) Find $f(-9)$ when $f(x) = |x| - 6$

$f(-9) = |-9| - 6$

$f(-9) = 9 - 6$

$f(-9) = 3$

(190) $f(x) = \frac{x+5}{14x-10}$ find $f(-10)$

$f(-10) = \frac{(-10)+5}{14(-10)-10}$

$f(-10) = \frac{-10+5}{-140-10}$

$f(-10) = \frac{-5}{-150}$

$f(-10) = \frac{5}{150}$

$f(-10) = \frac{5|(1)}{5|(30)}$

$f(-10) = \frac{1}{30}$

(191) $f(x) = \dfrac{x-10}{3x+13}$ find $f(-4)$

$$f(-4) = \frac{(-4)-10}{3(-4)+13}$$

$$f(-4) = \frac{-4-10}{-12+13}$$

$$f(-4) = \frac{-14}{1}$$

$$f(-4) = -14$$

(192) $f(x) = \dfrac{x^2+3}{x^3+3x}$ find $f(5)$

$$f(5) = \frac{(5)^2+3}{(5)^3+3(5)}$$

$$f(5) = \frac{(5)(5)+3}{(5)(5)(5)+3(5)}$$

$$f(5) = \frac{25+3}{125+15}$$

$$f(5) = \frac{28}{140}$$

$$f(5) = \frac{1(28)}{5(28)}$$

$$f(5) = \frac{1}{5}$$

193 Find the Domain

$f(x) = \frac{2x-3}{x+5}$

Set $x+5=0$

$x+5-5=0-5$

$x \neq -5$

Domain $= D = \{x \mid x \neq -5\}$

194 Graph $h(x) = x^2 - 1$

$h(-1) = (-1)^2 - 1$

$h(-1) = (-1)(-1) - 1$

$h(-1) = 1 - 1$

$h(-1) = 0$

$h(0) = (0)^2 - 1$

$h(0) = (0)(0) - 1$

$h(0) = 0 - 1$

$h(0) = -1$

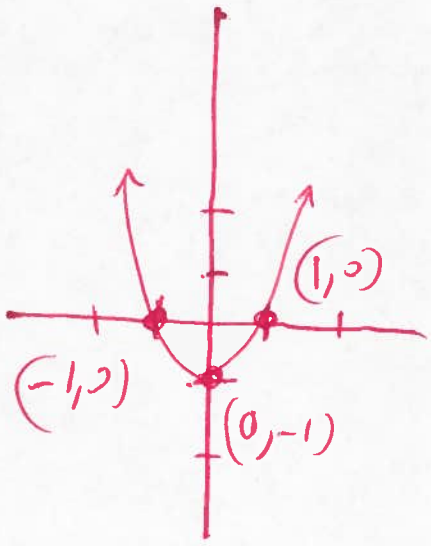
$h(1) = (1)^2 - 1$

$h(1) = (1)(1) - 1$

$h(1) = 1 - 1$

$h(1) = 0$

x	h(x)
-1	0
0	-1
1	0



195. Solve

$|x+1| = 7$

$|x| = a$

$x = -a$ or $x = a$

Set $x+1 = -7$ or $x+1 = 7$

$x+1-1 = -7-1$ or $x+1-1 = 7-1$

$x = -8$ or $x = 6$

$\{-8, 6\}$

(196) $|x+18|<7$

$|x|<a$
$-a<x<a$

$-7<x+18<7$

$-7-18<x+18-18<7-18$

$-25<x<-11$

OR

OR

$(-25,-11)$

(197) $|8k-6|\geq 3$

$|x|>a$
$x<-a$ OR $x>a$

$8k-6\leq -3$ OR $8k-6\geq 3$

$8k-6+6\leq -3+6$ OR $8k-6+6\geq 3+6$

$8k\leq 3$ OR $8k\geq 9$

$\frac{8k}{8}\leq\frac{3}{8}$ OR $\frac{8k}{8}\geq\frac{9}{8}$

$k\leq\frac{3}{8}$ OR $k\geq\frac{9}{8}$

OR

OR

$(-\infty,\frac{3}{8}]\cup[\frac{9}{8},\infty)$

(198) $\sqrt{\frac{64}{361}} =$

$\frac{\sqrt{64}}{\sqrt{361}} =$

$\frac{8}{19} =$

(199) $16^{\frac{1}{4}} =$

$(2^4)^{\frac{1}{4}} =$

$(2^{\frac{4}{1}})^{\frac{1}{4}} =$

$2^{\frac{4}{4}} =$

$2^1 =$

(200) $\sqrt{300k^7Q^8} =$

Primos 2, 3, 5, 7

$\sqrt{100 * 3 * k^6 k^1 Q^8} =$

$10k^3Q^4\sqrt{3k} =$

2	300
2	150
3	75
5	25
5	5
	1

64

(201) $\sqrt[3]{343x^4y^5} =$

$\sqrt[3]{(7)^3 x^3 x^1 y^3 y^2} =$

$(7)^1 x^1 y^1 \sqrt[3]{x^1 y^2} =$ or $7xy\sqrt[3]{xy^2}$

7	343
7	49
7	7
	1

(202) $\sqrt{48} =$

$\sqrt{16 \cdot 3} =$

$\sqrt{16}\sqrt{3} =$

$4\sqrt{3} =$

2	48
2	24
2	12
2	6
3	3
	1

(203) $\sqrt[3]{32}$

$\sqrt[3]{2^3 \cdot 2^2} =$

$2\sqrt[3]{2^2} =$

$2\sqrt[3]{4} =$

2	32
2	16
2	8
2	4
2	2
	1

(204) $\sqrt[3]{-64a^8b^5} =$

$\sqrt[3]{(-4)^3 a^6 a^2 b^3 b^2} =$

$(-4)^1 a^2 b^1 \sqrt[3]{a^2 b^2} =$

$-4a^2b\sqrt[3]{a^2b^2} =$

2	64
2	32
2	16
2	8
2	4
2	2
	1

(205.) $f(x) = \sqrt{2x-1}$ find $f(13)$

$f(13) = \sqrt{2(13)-1}$

$f(13) = \sqrt{26-1}$

$f(13) = \sqrt{25}$

$f(13) = 5$

Solve

(206) $\sqrt{2x} = 6$

$(\sqrt{2x})^2 = (6)^2$

$2x = 36$

$\frac{2x}{2} = \frac{36}{2}$

$x = 18$

$\{18\}$

67

207 $\sqrt{x+5} = 6$

$(\sqrt{x+5})^2 = (6)^2$

$x+5 = 36$

$x+5-5 = 36-5$

$x = 31$

$\{31\}$

208 $\sqrt{18y-9} = y+4$

$(\sqrt{18y-9})^2 = (y+4)^2$

$18y-9 = (y+4)(y+4)$

$18y-9 = y^2+4y+4y+16$

$18y-9 = y^2+8y+16$

$0 = y^2+8y+16-18y+9$

$0 = y^2-10y+25$

$0 = (y-5)(y-5)$

Soln $y-5=0$ OR $y-5=0$

$y-5+5=0+5$ OR $y-5+5=0+5$

$y=5$ OR $y=5$

$\{5\}$

ck

$\sqrt{18y-9} = y+4$

$\sqrt{18(5)-9} = (5)+4$

$\sqrt{90-9} = 5+4$

$\sqrt{81} = 9$

$9=9$ Good

209. $(2-7i)+(6+5i)=$

$2-7i+6+5i=$

$8-2i=$

210. $(3+6i)-(-9+i)=$

$3+6i+9-i=$

$12+5i=$

211. $(6-3i)(5+9i)=$

$30+54i-15i-27i^2=$

$30+39i-27i^2=$

$30+39i-27(-1)=$

$30+39i+27=$

$57+39i=$

use $i^2=-1$

212. $\frac{9+5i}{9+4i}=$

$\frac{(9+5i)}{(9+4i)}\left(\frac{9-4i}{9-4i}\right)=$

$\frac{81-36i+45i-20i^2}{81-36i+36i-16i^2}=$

$\frac{81+9i-20i^2}{81-16i^2}=$

$\frac{81+9i-20(-1)}{81-16(-1)}=$

$\frac{81+9i+20}{81+16}$

use $i^2=-1$

$\frac{101+9i}{97}=$

$\frac{101}{97}+\frac{9i}{97}=$

213 $x^2 = 196$

$\sqrt{x^2} = \pm\sqrt{196}$

$x = \pm 14$

$x = -14$ OR $x = 14$

$\{-14, 14\}$

69

214 $x^2 - 3 = 0$

$x^2 - 3 + 3 = 0 + 3$

$x^2 = 3$

$\sqrt{x^2} = \pm\sqrt{3}$

$x = \pm\sqrt{3}$

$x = -\sqrt{3}$ OR $x = \sqrt{3}$

$\{-\sqrt{3}, \sqrt{3}\}$

215. $(x-7)^2 = 4$

$\sqrt{(x-7)^2} = \pm\sqrt{4}$

$x - 7 = \pm 2$

$x - 7 = -2$ OR $x - 7 = 2$

$x - 7 + 7 = -2 + 7$ OR $x - 7 + 7 = 2 + 7$

$x = 5$ OR $x = 9$

$\{5, 9\}$

216 $(x+4)^2 = 13$

$\sqrt{(x+4)^2} = \pm\sqrt{13}$

$x + 4 = \pm\sqrt{13}$

$x + 4 - 4 = \pm\sqrt{13} - 4$

$x = \pm\sqrt{13} - 4$

$x = -4 \pm \sqrt{13}$

$x = -4 - \sqrt{13}$ OR $x = -4 + \sqrt{13}$

$\{-4 - \sqrt{13}$ OR $-4 + \sqrt{13}\}$

(217) $x^2+4x-45=0$ Solve by completing the square

$x^2+4x-45+45=0+45$

$x^2+4x=45$

$x^2+4x+\left(\frac{1}{2}(4)\right)^2=45+\left(\frac{1}{2}(4)\right)^2$

$x^2+4x+(2)^2=45+(2)^2$

$x^2+4x+4=45+4$

$x^2+4x+4=49$

$(x+2)(x+2)=49$

$(x+2)^2=49$

$\sqrt{(x+2)^2}=\pm\sqrt{49}$

$x+2=\pm 7$

$x+2=-7$ OR $x+2=7$

$x+2-2=-7-2$ OR $x+2-2=7-2$

$x=-9$ OR $x=5$

$\{-9, 5\}$

10

(218) use the Quadratic formula

$1x^2 + 12x + 35 = 0$

$a=1,\ b=12,\ c=35$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-(12) \pm \sqrt{(12)^2 - 4(1)(35)}}{2(1)}$$

$$x = \frac{-12 \pm \sqrt{144 - 140}}{2}$$

$$x = \frac{-12 \pm \sqrt{4}}{2}$$

$$x = \frac{-12 \pm 2}{2}$$

$x = -6 \pm 1$

$x = -6 - 1$ OR $x = -6 + 1$

$x = -7$ OR $x = -5$

$\{-7, -5\}$

11.

(21) Use the Quadratic formula

$1x^2 + 6x - 7 = 0$

$a=1,\ b=6,\ c=-7$

$$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$$

$$x = \frac{-(6) \pm \sqrt{(6)^2-4(1)(-7)}}{2(1)}$$

$$x = \frac{-6 \pm \sqrt{36+28}}{2}$$

$$x = \frac{-6 \pm \sqrt{64}}{2}$$

$$x = \frac{-6 \pm 8}{2}$$

$x = -3 \pm 4$

$x = -3-4$ or $x = -3+4$

$x = -7$ or $x = 1$

$\{-7, 1\}$

12

(220) Use the Quadratic formula

$1x^2 - 14x + 49 = 0$

$a=1,\ b=-14,\ c=49$

$$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$$

$$x = \frac{-(-14) \pm \sqrt{(-14)^2 - 4(1)(49)}}{2(1)}$$

$$x = \frac{14 \pm \sqrt{196-196}}{2}$$

$$x = \frac{14 \pm \sqrt{0}}{2}$$

$$x = \frac{14 \pm 0}{2}$$

$x = 7 \pm 0$

$\{7\}$

$x = 7-0$ or $x = 7+0$

$x = 7$ or $x = 7$

(221) Use Quadratic formula

14.

$1x^2 + 12x + 14 = 0$

$a=1,\ b=12,\ c=14$

$$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$$

$$x = \frac{-(12) \pm \sqrt{(12)^2-4(1)(14)}}{2(1)}$$

$$x = \frac{-12 \pm \sqrt{144-56}}{2}$$

$$x = \frac{-12 \pm \sqrt{88}}{2}$$

$$x = \frac{-12 \pm \sqrt{4*22}}{2}$$

$$x = \frac{-12 \pm \sqrt{4}\sqrt{22}}{2}$$

$$x = \frac{-12 \pm 2\sqrt{22}}{2}$$

$$x = -6 \pm 1\sqrt{22}$$

$$x = -6 \pm \sqrt{22}$$

$x = -6 - \sqrt{22}$ OR $x = -6 + \sqrt{22}$

$\{-6-\sqrt{22},\ -6+\sqrt{22}\}$

2 | 88
2 | 44
2 | 22
11 | 11
1

(222) use Quadratic formula

15.

$1x^2 + 12x + 45 = 0$

$a=1,\ b=12,\ c=45$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-(12) \pm \sqrt{(12)^2 - 4(1)(45)}}{2(1)}$$

$$x = \frac{-12 \pm \sqrt{144 - 180}}{2}$$

$$x = \frac{-12 \pm \sqrt{-36}}{2}$$

$$x = \frac{-12 \pm 6i}{2}$$

$$x = -6 \pm 3i$$

$\{-6-3i,\ -6+3i\}$

$x = -6 - 3i$ or $x = -6 + 3i$

(223) use the Quadratic formula

$3x^2 - 5x - 8 = 0$

$a = 3,\ b = -5,\ c = -8$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-(-5) \pm \sqrt{(-5)^2 - 4(3)(-8)}}{2(3)}$$

$$x = \frac{5 \pm \sqrt{25 + 96}}{6}$$

$$x = \frac{5 \pm \sqrt{121}}{6}$$

$$x = \frac{5 \pm 11}{6}$$

$x = \frac{5-11}{6}$ OR $x = \frac{5+11}{6}$

$x = \frac{-6}{6}$ OR $x = \frac{16}{6}$

$x = -1$ OR $x = \frac{8}{3}$

$\left\{-1, \frac{8}{3}\right\}$

76.

(224) Use the Quadratic formula

$4x^2+10x=-1$

$4x^2+10x+1=0$

$a=4,\ b=10,\ c=1$

$$x=\frac{-b\pm\sqrt{b^2-4ac}}{2a}$$

$$x=\frac{-(10)\pm\sqrt{(10)^2-4(4)(1)}}{2(4)}$$

$$x=\frac{-10\pm\sqrt{100-16}}{8}$$

$$x=\frac{-10\pm\sqrt{84}}{8}$$

$$x=\frac{-10\pm\sqrt{4\cdot 21}}{8}$$

$$x=\frac{-10\pm\sqrt{4}\sqrt{21}}{8}$$

$$x=\frac{-10\pm 2\sqrt{21}}{8}$$

$$x=\frac{2(-5\pm\sqrt{21})}{2(4)}$$

$$x=\frac{-5\pm\sqrt{21}}{4}$$

Primes 2, 3, 5, 7

2 | 84
2 | 42
3 | 21
7 | 7
1

$$\left\{\frac{-5-\sqrt{21}}{4},\ \frac{-5+\sqrt{21}}{4}\right\}$$

$$x=\frac{-5-\sqrt{21}}{4} \quad \text{OR} \quad x=\frac{-5+\sqrt{21}}{4}$$

(215) Use the Quadratic formula

78.

$3x^2 + 10x + 4 = 0$

$a = 3,\ b = 10,\ c = 4$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-(10) \pm \sqrt{(10)^2 - 4(3)(4)}}{2(3)}$$

$$x = \frac{-10 \pm \sqrt{100 - 48}}{6}$$

$$x = \frac{-10 \pm \sqrt{52}}{6}$$

$$x = \frac{-10 \pm \sqrt{4 * 13}}{6}$$

$$x = \frac{-10 \pm \sqrt{4}\sqrt{13}}{6}$$

$$x = \frac{-10 \pm 2\sqrt{13}}{6}$$

$$x = \frac{2(-5 \pm 1\sqrt{13})}{2(3)}$$

$$x = \frac{-5 \pm \sqrt{13}}{3}$$

$$x = \frac{-5 - \sqrt{13}}{3} \quad \text{OR} \quad x = \frac{-5 + \sqrt{13}}{3}$$

$$\left\{ \frac{-5 - \sqrt{13}}{3}, \quad \frac{-5 + \sqrt{13}}{3} \right\}$$

2	52
2	26
13	13
	1

(226.) $4x^2+1=3x$ Use Quadratic Formula

79

$4x^2+1-3x=3x-3x$

$4x^2+1-3x=0$

$4x^2-3x+1=0$

$a=4,\quad b=-3,\quad c=1$

$$x=\frac{-b\pm\sqrt{b^2-4ac}}{2a}$$

$$x=\frac{-(-3)\pm\sqrt{(-3)^2-4(4)(1)}}{2(4)}$$

$$x=\frac{3\pm\sqrt{9-16}}{8}$$

$$x=\frac{3\pm\sqrt{-7}}{8}$$

$$x=\frac{3\pm\sqrt{-1}\sqrt{7}}{8}$$

$$x=\frac{3\pm i\sqrt{7}}{8}$$

$$\left\{\frac{3-\sqrt{7}i}{8} \text{ or } \frac{3+\sqrt{7}i}{8}\right\}$$

or

$$x=\frac{3-i\sqrt{7}}{8} \text{ or } x=\frac{3+i\sqrt{7}}{8}$$

use Quadratic formula

(227) $1x^2+10x+34=0$

$a=1,\ b=10,\ c=34$

$$x=\frac{-b\pm\sqrt{b^2-4ac}}{2a}$$

$$x=\frac{-(10)\pm\sqrt{(10)^2-4(1)(34)}}{2(1)}$$

$$x=\frac{-10\pm\sqrt{100-136}}{2}$$

$$x=\frac{-10\pm\sqrt{-36}}{2}$$

$$x=\frac{-10\pm 6i}{2}$$

$$x=-5\pm 3i$$

$\{-5-3i,\ -5+3i\}$

$x=-5-3i$ OR $x=-5+3i$

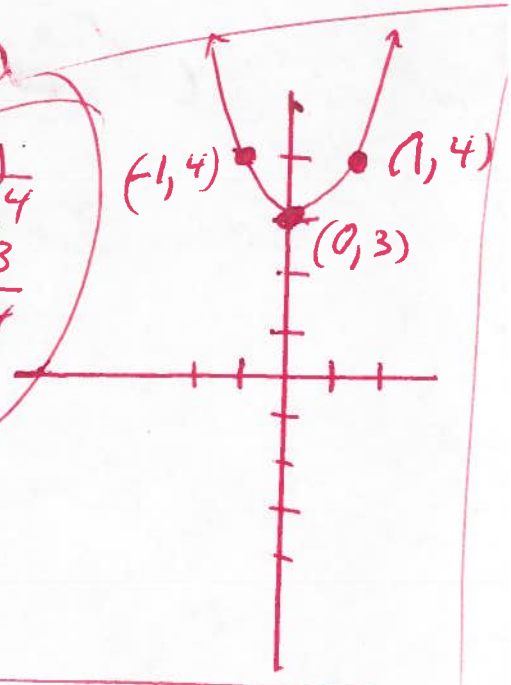
(228) Graph $f(x)=x^2+3$

$f(-1)=(-1)^2+3=(-1)(-1)+3=1+3=4$

$f(0)=(0)^2+3=(0)(0)+3=0+3=3$

$f(1)=(1)^2+3=(1)(1)+3=1+3=4$

x	y
-1	4
0	3
1	4



(229) Graph $f(x) = (x+2)^2 - 4$ Vertex $= (-2, -4)$ axis of symmetry $x = -2$

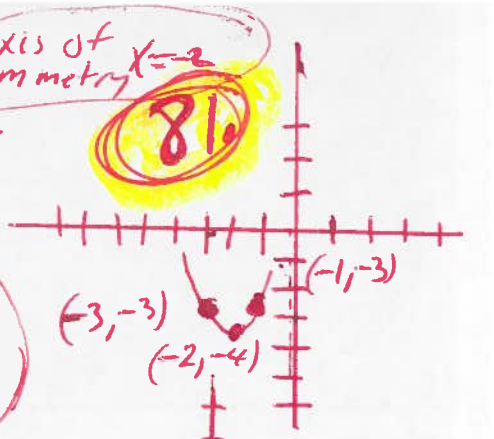
81.

$f(-3) = (-3+2)^2 - 4$
$f(-3) = (-1)^2 - 4$
$f(-3) = (-1)(-1) - 4$
$f(-3) = 1 - 4$
$f(-3) = -3$

$f(-2) = (-2+2)^2 - 4$
$f(-2) = (0)^2 - 4$
$f(-2) = (0)(0) - 4$
$f(-2) = 0 - 4$
$f(-2) = -4$

$f(-1) = (-1+2)^2 - 4$
$f(-1) = (1)^2 - 4$
$f(-1) = (1)(1) - 4$
$f(-1) = 1 - 4$
$f(-1) = -3$

x	f(x)
-3	-3
-2	-4
-1	-3



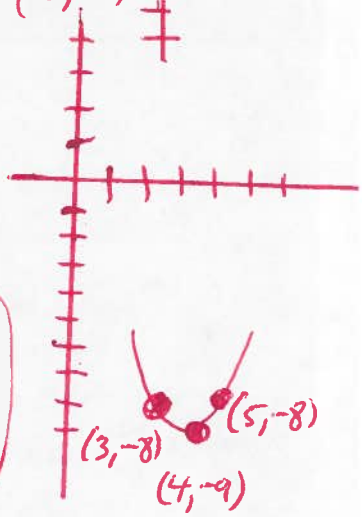
(230) Graph $f(x) = x^2 - 8x + 7$

$f(3) = (3)^2 - 8(3) + 7$
$f(3) = (3)(3) - 8(3) + 7$
$f(3) = 9 - 24 + 7$
$f(3) = -8$

$f(4) = (4)^2 - 8(4) + 7$
$f(4) = (4)(4) - 8(4) + 7$
$f(4) = 16 - 32 + 7$
$f(4) = -9$

$f(5) = (5)^2 - 8(5) + 7$
$f(5) = (5)(5) - 8(5) + 7$
$f(5) = 25 - 40 + 7$
$f(5) = -8$

x	f(x)
3	-8
4	-9
5	-8



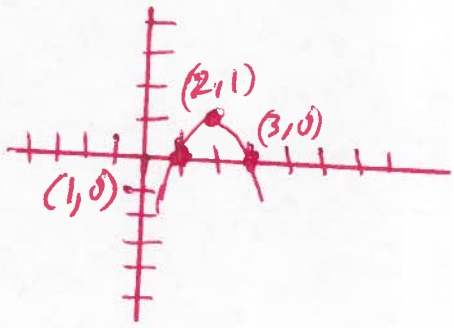
(231) Graph $f(x) = -x^2 + 4x - 3$

$f(1) = -(1)^2 + 4(1) - 3$
$f(1) = -(1)(1) + 4(1) - 3$
$f(1) = -1 + 4 - 3$
$f(1) = 0$

$f(2) = -(2)^2 + 4(2) - 3$
$f(2) = -(2)(2) + 4(2) - 3$
$f(2) = -4 + 8 - 3$
$f(2) = 1$

$f(3) = -(3)^2 + 4(3) - 3$
$f(3) = -(3)(3) + 4(3) - 3$
$f(3) = -9 + 12 - 3$
$f(3) = 0$

x	f(x)
1	0
2	1
3	0



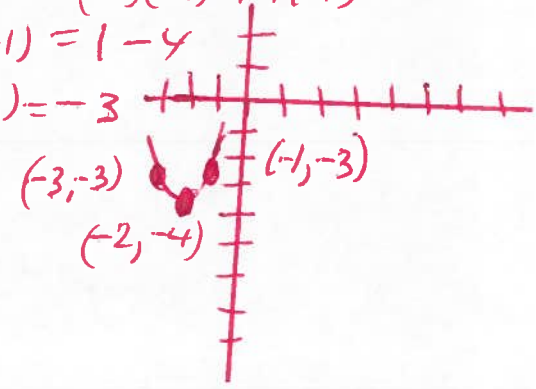
(232) Graph $f(x) = x^2 + 4x$

$f(-3) = (-3)^2 + 4(-3)$
$f(-3) = (-3)(-3) + 4(-3)$
$f(-3) = 9 - 12$
$f(-3) = -3$

$f(-2) = (-2)^2 + 4(-2)$
$f(-2) = (-2)(-2) + 4(-2)$
$f(-2) = 4 - 8$
$f(-2) = -4$

$f(-1) = (-1)^2 + 4(-1)$
$f(-1) = (-1)(-1) + 4(-1)$
$f(-1) = 1 - 4$
$f(-1) = -3$

x	f(x)
-3	-3
-2	-4
-1	-3



(233) Graph $f(x) = x^2 + 2x - 8$

$f(-4) = (-4)^2 + 2(-4) - 8$
$f(-4) = (-4)(-4) + 2(-4) - 8$
$f(-4) = 16 - 8 - 8$
$f(-4) = 0$

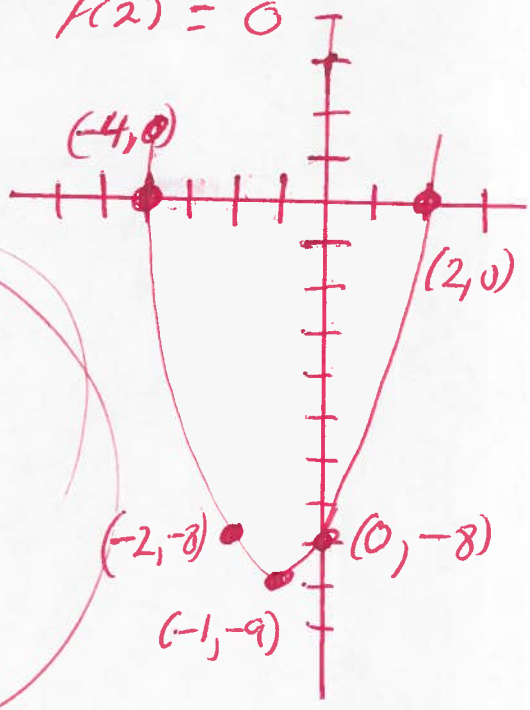
$f(-2) = (-2)^2 + 2(-2) - 8$
$f(-2) = (-2)(-2) + 2(-2) - 8$
$f(-2) = 4 - 4 - 8$
$f(-2) = -8$

$f(-1) = (-1)^2 + 2(-1) - 8$
$f(-1) = (-1)(-1) + 2(-1) - 8$
$f(-1) = 1 - 2 - 8$
$f(-1) = -9$

$f(0) = (0)^2 + 2(0) - 8$
$f(0) = (0)(0) + 2(0) - 8$
$f(0) = 0 + 0 - 8$
$f(0) = -8$

$f(2) = (2)^2 + 2(2) - 8$
$f(2) = (2)(2) + 2(2) - 8$
$f(2) = 4 + 4 - 8$
$f(2) = 0$

x	f(x)
-4	0
-2	-8
-1	-9
0	-8
2	0



(234) Graph $f(x) = -x^2 + 4x - 3$

$f(0) = -(0)^2 + 4(0) - 3$
$f(0) = -(0)(0) + 4(0) - 3$
$f(0) = 0 + 0 - 3$
$f(0) = -3$

$f(1) = -(1)^2 + 4(1) - 3$
$f(1) = -(1)(1) + 4(1) - 3$
$f(1) = -1 + 4 - 3$
$f(1) = 0$

$f(2) = -(2)^2 + 4(2) - 3$
$f(2) = -(2)(2) + 4(2) - 3$
$f(2) = -4 + 8 - 3$
$f(2) = 1$

$f(3) = -(3)^2 + 4(3) - 3$
$f(3) = -(3)(3) + 4(3) - 3$
$f(3) = -9 + 12 - 3$
$f(3) = 0$

x	f(x)
0	-3
1	0
2	1
3	0